CLAIMS

1. A device for housing a planar optical component for use in sensing, said device comprising:

an optical assembly adapted to mount the planar optical component so as to define a longitudinal path through the device in which the planar optical component is effectively exposed in free space and including guiding means for correlating along said longitudinal path the position of said planar optical component and of a source of electromagnetic radiation, whereby to expose said planar optical component to said electromagnetic radiation along said longitudinal path whilst substantially eliminating stray electromagnetic radiation,

wherein the optical assembly comprises a cavity which permits access to a face of the planar optical component or to a face of a base with which the planar optical component is in intimate thermal contact whereby to enable an inner temperature controller to be positioned in thermal contact with the planar optical component for controlling the temperature of the planar optical component.

2. A device as claimed in claim 1 wherein the inner temperature controller is an inner Peltier assembly capable of adding heat to or dissipating heat from the planar optical component.

3. A device as claimed in claim 2 wherein the inner Peltier assembly comprises: an inner Peltier mounted on an inner Peltier mount.

4. A device as claimed in claim 3 wherein the Peltier mount has a concave underside to optimise thermal contact with the

planar optical component or with a base with which the planar optical component is in intimate thermal contact.

5. A device as claimed in any preceding claim wherein the planar optical component is a sensor.

6. A device as claimed in any preceding claim wherein the sensor is mounted on a sensor base and is in intimate thermal contact therewith.

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7. A device as claimed in any preceding claim wherein the optical assembly and inner temperature controller are contained within a conducting sleeve.

8. A device as claimed in claim 7 wherein the conducting sleeve comprises a copper heat shroud.

9. A device as claimed in claim 8 wherein the copper heat shroud is provided with an opening which is suitably disposed to coincide with the cavity in the optical assembly thereby allowing the inner Peltier assembly to be inserted in the optical assembly after the optical assembly has been inserted in the conducting sleeve.

10. A device as claimed in either of claims 8 or 9 wherein the heat shroud comprises an integral laser module holder for inserting a laser module.

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11. A device as claimed in any of claims 3 to 10 further comprising a Peltier exhaust assembly which permits thermal transfer from an exhaust side of the inner Peltier to the environment.

12. A device as claimed in claim 11 wherein the Peltier exhaust assembly comprises: an exhaust plate positioned to allow thermal exchange with the environment.

q4 13. A device as claimed in claim 11 or 12 wherein the Peltier exhaust assembly comprises: means for thermally contacting the inner Peltier assembly with the exhaust plate.

14. A device as claimed in claim 13 wherein the means for thermally contacting the inner Peltier assembly with the exhaust plate is a thermally conducting exhaust strip.

q5 15. A device as claimed in any of claims 11 to 14 wherein the Peltier exhaust assembly comprises: an exhaust guide capable of fitting over the insulating collar of a laser module.

16. A device as claimed in claim 15 wherein the exhaust guide defines a slot into which the thermally conducting exhaust strip may be inserted.

q6 17. A device as claimed in any preceding claim comprising: an outer temperature controller which permits coarse temperature control of one or more of the group selected from the conducting sleeve, laser module, laser module holder, the exterior parts of the optical assembly and the electronics.

18. A device as claimed in claim 17 wherein the outer temperature controller takes the form of an outer Peltier assembly.

19. A device as claimed in claim 18 comprising: means for urging the Peltier exhaust assembly onto the inner Peltier assembly.

20. A device as claimed in claim 19 wherein the means for urging is a restraining sleeve added outwardly of the heat shroud to force the Peltier exhaust assembly onto the inner Peltier assembly at a first end and the exhaust plate at the other.

21. A device as claimed in claim 20 wherein the outer Peltier assembly is provided externally of the restraining sleeve, said restraining sleeve provided with an aperture to enable exposure of an effective area of the conducting sleeve to achieve thermal contact with the outer Peltier assembly.

22. A device as claimed in any preceding claim which is capable of sequential construction from a plurality of discrete assemblies, said assemblies being:

an optical assembly contained within a conducting sleeve;

an inner Peltier assembly comprising an inner Peltier; and

a Peltier exhaust assembly,

wherein: (1) the inner Peltier assembly is housed within the cavity of the optical assembly so as to achieve intimate thermal contact with the planar optical component and (2) the Peltier exhaust assembly permits thermal transfer from the exhaust side of the inner Peltier to the environment and is thermally isolated from the conducting sleeve.

23. A device as claimed in claim 22 further comprising a discrete outer Peltier assembly in thermal contact with the conducting sleeve.

24. A device as claimed in any preceding claim wherein the planar optical component has a plurality of waveguides.

25. A kit capable of being assembled into a device as defined in any preceding claim, said kit comprising:

an optical assembly, an inner Peltier assembly, a conducting sleeve, a Peltier exhaust assembly and an outer Peltier assembly, wherein:

the optical assembly is capable of being inserted in the conducting sleeve;

the inner Peltier assembly is capable of being housed within the cavity of the optical assembly so as to achieve intimate thermal contact with the planar optical component;

the Peltier exhaust assembly is capable of being positioned in thermal isolation from the conducting sleeve so as to permit thermal transfer from the exhaust side of the inner Peltier to the environment; and

the outer Peltier assembly is capable of being positioned so as to achieve thermal contact with the conducting sleeve.

26. A process for constructing a device as defined in any of claims 1 to 24 comprising the steps of:

inserting an optical assembly in a conducting sleeve comprising an integral laser module housing;

inserting a laser module into the laser module housing;

housing an inner Peltier assembly in the cavity of the optical assembly so as to achieve thermal contact with the planar optical component;

positioning a Peltier exhaust assembly in thermal isolation from the conducting sleeve so as to permit thermal transfer from the exhaust side of the inner Peltier to the environment.

27. A process as claimed in claim 26 comprising the additional steps of:

constructing an outer restraining sleeve;

constructing an outer casing; and

positioning an outer Peltier assembly on the outer casing or restraining sleeve whereby to achieve thermal contact with the conducting sleeve.